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Forest Pest Management

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EVALUATION R2-76-7

OAK WILT

Five New Counties in
Kansas and Nebraska

Thurston County, Nebraska
Jackson, Linn, Neosho &
Cherokee Counties,
Kansas

SEPTEMBER 1976

Rocky Mountain Region

U.S. Department of Agriculture Forest Service

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INTRODUCTION

Oak wilt was first discovered in both Kansas and Nebraska in 1950 and by 1967 its range had expanded to 18 counties in the two states (6). The last detection survey in 1970 yielded no new locations of oak wilt in either state.

In recent years the spread of oak wilt has apparently slowed down. A 1973 survey in Arkansas revealed no significant variation from the previous range of oak wilt (8). An extensive survey in six southern states during 1973-74 yielded only one new location and it was concluded that oak wilt was not spreading southward (5).

Oak wilt detection surveys have been conducted in Kansas and Nebraska for over 20 years but the lack of any new disease detections since 1967 suggest that oak wilt may have reached its limits in these two states. The purpose of this survey was to survey the oak forests of Kansas and Nebraska for new locations of oak wilt and determine whether future surveys are warranted.

METHODS AND MATERIALS

An aerial survey of oak forest type was conducted in 29 counties of Nebraska and Kansas in July 1975 (Figure 1). These counties were selected because they were adjacent to counties known to have oak wilt and also contained significant oak forest type. A sketch-mapping technique was employed in a Cessna Skymaster flying at approximately 150 miles per hour at 500-1000 feet above ground level. The mapping crew consisted of the pilot, navigator and an observer. Symptomatic trees were recorded on 1:250,000 U. S. Geological Survey maps.

Ground checks were made in 1975 and 1976 using the sketch maps for orientation. When symptomatic trees were located they were examined to eliminate obvious injuries such as lightning strikes, root damage or herbicide poisoning. Branch samples were clipped from wilted portions of the crown and checked for gross symptoms.

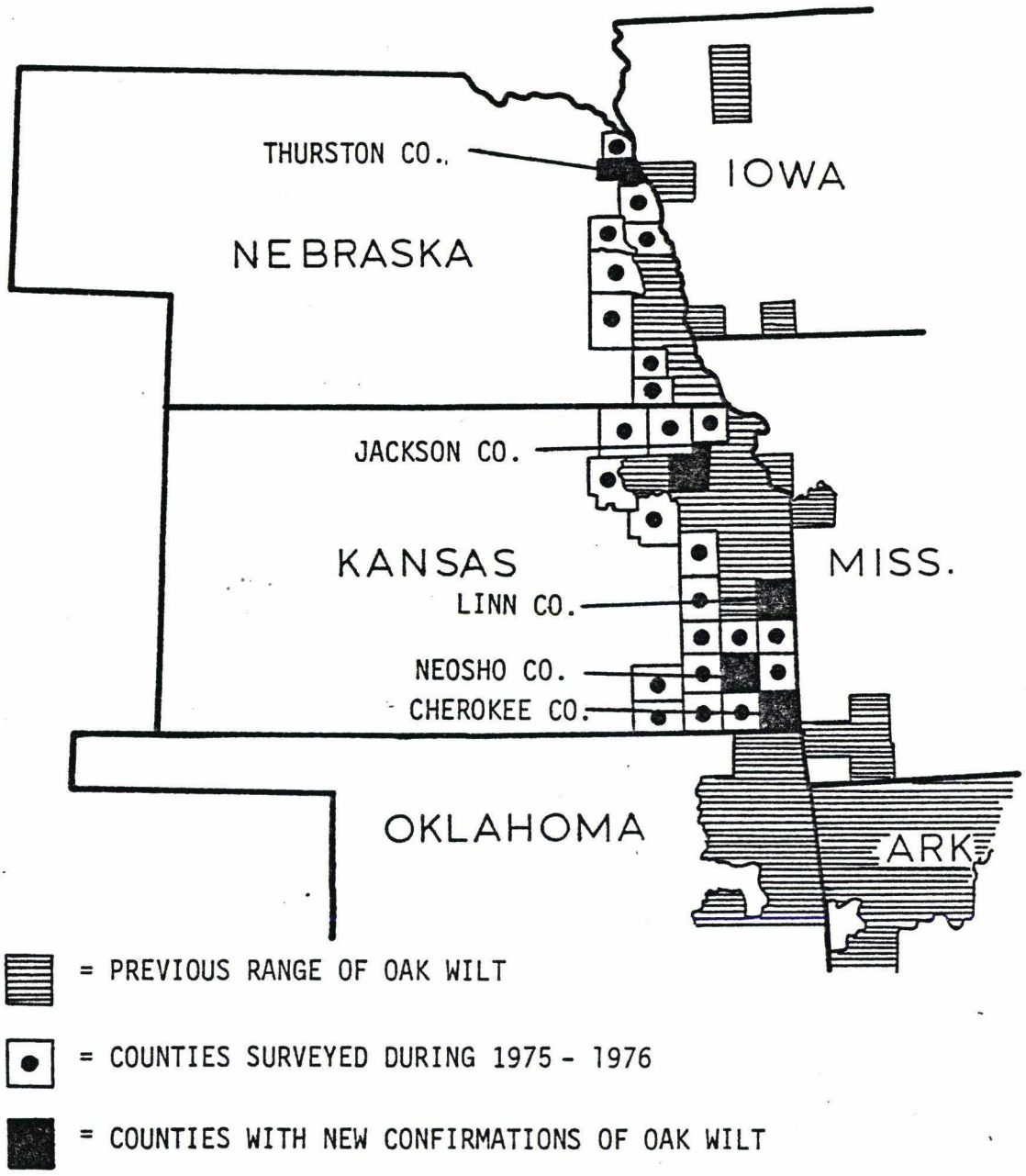


Figure 1 - Oak wilt was confirmed in five new counties during a detection survey in Kansas and Nebraska.

If symptom expression was typical (4) samples were collected, placed in plastic bags and refrigerated to minimize contamination.

Samples were cultured according to the procedure of Barnett (2) using potato dextrose agar (PDA) supplemented with streptomycin sulfate to eliminate bacterial contamination. Cultural identification of the causal fungus, Ceratocystis fagacearum (Bretz) Hunt was the confirming criterion for a diagnosis of oak wilt.

RESULTS AND DISCUSSION

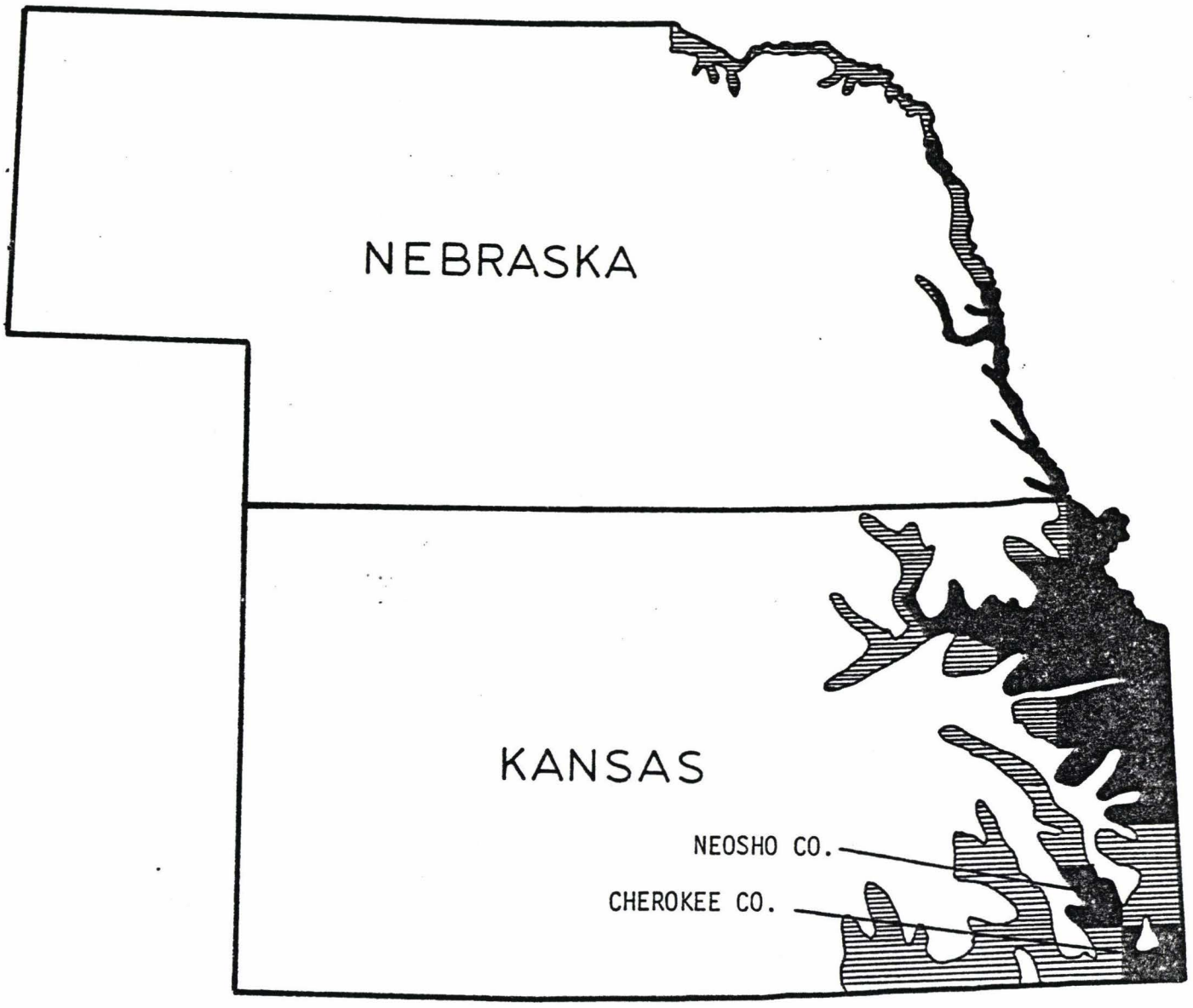
Five new counties were confirmed to have oak wilt, one in Nebraska and four in Kansas (Figure 1). The fungus was isolated from northern red oak (Quercus rubra L.) in Thurston County, Nebraska and Jackson, Linn and Cherokee Counties in Kansas. Blackjack oak (Q. marilandica Muenschh.) was the host in Neosho County, Kansas.

The discovery of the oak wilt fungus in Neosho and Cherokee Counties confirms that this pathogen has spread to previously uninfected oak forests in southeastern Kansas (Figure 2). Because of the extensive area of oak forest type in this region the potential range of oak wilt has been expanded considerably.

The relative impact of oak wilt should remain low in Kansas and Nebraska, however. Diseased trees were uncommon in these new counties so the actual tree loss should be minor. Oak is not a major commercial species in these states at the present time. Established oak wilt centers did not appear to be intensifying rapidly. The geographical range of oak wilt is important, however, because plant quarantine requirements of some countries prohibit the importation of oak logs or lumber from known oak wilt areas (1).

CONCLUSIONS AND RECOMMENDATIONS

The geographic range of oak wilt has been extended by one new location, Thurston County, in Nebraska and four new locations in Kansas: Jackson, Linn, Neosho and Cherokee Counties. The discovery of oak wilt in Neosho and Cherokee Counties confirms that this disease has spread to previously uninfected oak forests in southeastern Kansas. The relative impact of oak wilt is low in these two states, however, because of slow spread and intensification of the disease and the minor economic importance of oaks.



= DISTRIBUTION OF OAK FOREST TYPE IN KANSAS AND NEBRASKA

= CURRENT RANGE OF OAK WILT BY COUNTY

Figure 2 - Comparison of the current range of oak wilt with the geographic distribution of oak forest in Kansas and Nebraska (Timber type taken from Chase and Strickler, 1968 and Stone and Bagley, 1961)

Future large scale surveys for oak wilt are not recommended for Kansas and Nebraska. Ground detection by field personnel during normal forestry activities should be sufficient to monitor any future spread of the disease.

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